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LOYOLA UNIVERSITY CHICAGO

DOWN AND OUT:  
COLLEGE STUDENTS EXPERIENCING DEPRESSIVE SYMPTOMS

A THESIS SUBMITTED TO  
THE FACULTY OF THE GRADUATE SCHOOL  
IN CANDIDACY FOR THE DEGREE OF  
MASTER OF ARTS

PROGRAM IN SOCIOLOGY

BY  
JENNA OFENLOCH  
CHICAGO, IL  
DECEMBER 2016

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## ABSTRACT

Survey research that asks respondents to report on depression often ask respondents whether they have been diagnosed with depression by a medical professional. But such questions underestimate depression by leaving out respondents who are unable or unwilling to seek professional help. Thus, other studies seek to ask respondents to report symptoms of various dimensions of depression. This is especially important because, according to the CDC, “persons with mild depressive symptoms, as well as those with moderate or severe depressive symptoms, reported difficulties with work, home, and social activities related to their symptoms”. But some groups are more prone to depression.

Given the increased stressors that college students face in their transition to adulthood, coupled with increased exposure to—and participation in—potential health risks including drinking, smoking, and drug usage they face increased risk for experiencing depressive symptoms. This inflated risk for experiencing depressive symptoms often results in one’s academic success and satisfaction with school being negatively affected.

This study aims to examine, first, the factors that influence reported depressive symptoms and, second, how the interrelationships among these factors and depressive symptoms are associated with academic success and satisfaction among college students.

The data used for this study come from the Healthy Minds Study from the University of Michigan, a preexisting data set that includes 89,486 research subjects collected between 2007-2013. The Healthy Minds Study is an annual web-based survey that strives to examine mental health trends among graduate and undergraduate students who opted into the study. Since the study's inception in 2007, over 100,000 students from over 100 universities and colleges have been surveyed. This study examines college student's reported depressive symptoms, the factors associated with depressive symptoms, and how depressive symptoms are associated with academic success and rates of retention, building conceptual and empirical models that examine how a broad range of factors are linked to depressive symptoms and academic success in a complex web of disadvantage.

## CHAPTER ONE

### INTRODUCTION

Depression affects people from all walks of life across America at this very moment. In fact, it is estimated that merely approximately 17% of all adults living in the United States are thought to have what is defined as “optimal”, or ideal, mental health (World Health Organization). “Characterized by changes in mood, self-attitude, cognitive functioning, sleep, appetite, and energy level” this invisible, debilitating illness plagues 1 in 20 Americans aged 12 and over (Pratt and Brody 2008). Moreover, its prevalence is shocking as it is known as “the third most important cause of disease burden worldwide in 2004” (World Health Organization). If mental illnesses are plaguing so many, why is no one talking about it?

In a nationally representative study conducted by the Center for Disease Control and the National Center for Health Statistics, researchers found that throughout 2009-2012, 7.6% of all Americans aged 12 and over had experienced moderate or severe depressive symptoms in the past two weeks. Additionally, the CDC notes that rates of depressive symptoms increase as age increases until a person is in their 60s (Pratt and Brody 2014).

This paper will examine a population that is especially susceptible to falling victim to depressive symptoms: college students. Given the high percentage of Americans aged 12 and over experiencing depressive symptoms coupled with the way that college

campuses may serve as breeding grounds for negative health behaviors which contribute to the development of depressive symptoms, college students must be thoroughly examined. Contributing to the reason why further examination of this population is direly needed is the fact that the prevalence of depression among college students in the United States increased from 10% in 2000 to 15% in 2007 (Eisenberg, Gollust, Golberstein, & Hefner, 2007). Moreover, findings from a cross-sectional study at a large university indicated that 15.6% of undergraduate students and 13% of graduate students were experiencing symptoms of depression (Eisenberg et al. 2007). These high rates of depressive symptoms among college students denote a serious mental health epidemic that must be thoughtfully explored. It is perhaps even more urgent than it appears to be at first glance: adults ages 18-39 are the second most likely age group to experience depressive symptoms behind adults ages 40-59. College students experiencing depressive symptoms sometimes grow into adults experiencing depressive symptoms (Pratt and Brody 2014).

Thus, if depressive symptoms are not dealt with early in life, family life, relationships, and careers may suffer throughout adulthood as a result. To illustrate this point, a recent study examining mental health and dating in young adulthood concluded that respondents who had the highest number of depressive symptoms in adolescence also had the highest number of dating conflicts in young adulthood (Thorsen and Pearce-Morgan 2016). Thus, this study focuses on this at-risk population in an effort to confirm and expand upon the literature currently available through exploring how and why college students are experiencing these heightened rates of depression. If college students

exhibiting depressive symptoms are given the help that they need at the onset of the development of symptoms, perhaps America's young-adult population would be better equipped to transition into the responsibilities that come with adulthood.

### **Depression and Experiencing Depressive Symptoms.**

#### **Measurement of depression and depressive symptoms in surveys.**

In order to fully understand and examine depression among college students, it is imperative to establish the difference between depression as an illness and what it means to experience depressive symptoms. When examining the measurement of depressive symptoms in survey research, such as in the data used for this study, depressive symptoms are often measured via self-administered questionnaires using questions developed by mental health professionals to gauge the number and the severity of depressive symptoms experienced by the individual. However, while an individual may screen positively for experiencing depressive symptoms, this does not mean that this individual is experiencing a major depressive episode or that the individual has been diagnosed as definitively having depression. This is why this particular study only examines college students who are exhibiting depressive symptoms and does not claim to examine those who have already been definitively diagnosed with depression. To definitively diagnose someone with depression or as experiencing a major depressive episode — a period of two or more weeks where an individual experiences a loss of interest in everyday activities, hopelessness, anxiety, fatigue, insomnia, feelings of worthlessness, irritability and other symptoms of depression, as described in the DSM-5 — one must seek the help of a medical professional.

### **Stigma and Inability to Identify Symptoms.**

There is an average delay of 11 years between the onset of a mental illness and treatment (Hunt and Eisenberg 2010). This can, in part, be attributed to how many young adults do not know how to correctly identify symptoms of major depression or other various types of mental illness symptomatology (Yamawaki, Riley, Sato, and Omori 2015). Additionally, the substantial prevalence of stigma against mental illness can be credited with this lack of knowledge, as well as the perpetuation of incorrect knowledge regarding mental illnesses and how symptoms of these illnesses are typically manifested (Yamawaki et al. 2015).

Depression is a mental illness that is especially stigmatized, so much so that it is more likely to be labeled a mental illness than alcohol abuse (Link, Struening, Rahav, Phelan, and Nuttbrock 1997). Moreover, the stigma that comes along with labelling someone as depressed causes an increase in negative stereotyping and, in turn, that negative stereotyping causes an increase in discrimination against those experiencing the depressive symptoms (Phelan and Basow 2007). This negative stereotyping of those who are suffering from a mental illness causes those who do not identify as experiencing a mental illness to categorize those who do to be dangerous and/or of lacking character. Those who label the mentally ill this way implement strategies of social distance and cast out those experiencing these symptoms to be an “other” (Phelan and Basow 2007).

The ostracizing of those experiencing depression and other mental illnesses only cause the mental illness to be exacerbated (Link et al. 1997). Instead of stigma masking depression and the symptoms a depressed person experiences, stigma only works to make

them worse. The rejection and isolation of the person causes society to view them as undesirable and unworthy of typical social interactions, in turn causing the person to view themselves as being incompetent and/or worthless. This cycle of stigmatization results in impacting one's ability to seek employment, housing, education, and willingness to seek treatment for the mental illness at hand (Couture and Penn 2003).

Link and Phelan developed a theory identifying four main tenants of stigma: 1) the stigma is labelled, 2) the association of the labelled stigma with a stereotype, 3) the separation of in-groups and out-groups based on the negative stereotyping of the labelled group, 4) the stigmatized are discriminated against. Important to note is how the fourth component is able to occur because the first three components are perpetuated by a dominant social group (i.e., those with more cultural, political, and/or economic power than the stigmatized) (Phelan and Basow 2007). This stigmatization of a person can, in fact, leave lasting wounds even after the mental illness that led to the stigmatization has been addressed and treated (Link et al. 1997). Thus, the persistence of stigma against mental illness can be just as harmful as the illness itself, often exacerbating the symptoms of the mental illness and deterring those experiencing symptoms from seeking help.

### **Positive and Negative Health Behaviors as Coping Mechanisms.**

Both positive and negative health behaviors can affect mental health and rates of depression. The terms "positive" and "negative" health behaviors do not denote a value judgement. Instead, the term "positive health behaviors" indicates behaviors that may improve one's health, the term "negative health behaviors" indicates behaviors that may decrease one's health. Positive health habits include things such as regular exercise and

eating healthfully can aid in promoting mental health and reducing rates of depression and other mental illnesses. Negative health habits such as smoking, drinking, and drug use exacerbate symptoms of mental illness (Beiter, Nash, McCrady, Rhoades, Linscomb, Clarahan, and Sammut 90) . These negative health behaviors are likely used to help those experiencing symptoms of depression cope when they do not know about positive health behaviors or they are made unavailable.

Examining negative and positive health habits is especially important when studying college students. This is because many young adults are on their own for the first time and may not be able to care for themselves in ways that produce mental health. New found freedom along with stifling levels of stress stemming from academics and other responsibilities can create an environment where negative health habits are easily cultivated for some college students (Melnik et al. 2014).

In a study conducted cross-culturally on American and Australian college students, Australian respondents who smoked and binge drank were the most likely to participate in insufficient rates of exercise and inadequate vegetable consumption. These respondents were also the most likely to have the most depressive symptoms (Lovell, Nash, Sharman, and Lane 2014). Additionally, individuals who did not eat breakfast and/or had poor sleep quality exhibited high rates of depressive symptoms (Lovell et al. 2014). This demonstrates that negative health behaviors tend to cluster together, creating what are referred to as “clustering health behaviors” that exacerbate negative mental health behaviors and depressive symptoms (Beiter et al. 90). These negative clustering health behaviors are especially prevalent among a college student population because of



the many stressors that are unique to a college student population; two-thirds of the Australian student respondents described depressive and other mental health illness symptoms, denoting that more students are experiencing mental illness than those who comprise the general Australian public (Lovell et al. 2014).

### **Buying Health: socioeconomic status and mental health.**

Link and Phelan's theory of fundamental causes suggests that the association between how socioeconomic status and health endures throughout time. Socioeconomic status embodies many facets of social life that denote power; money, knowledge, prestige, and social connections. Should one have power and possess these facets of social life, the theory maintains one's health would be well protected (Phelan, Link, and Tehranifar 2010). Link and Phelan's theory has two fundamental tenets: an individual's unique risk factors for various illnesses must be explored by examining what puts people at risk for developing specific illnesses, as well as that socioeconomic status and social support are perpetually fundamental causes for one's health to be good or poor regardless of if intervening societal mechanisms change (Link and Phelan 1995).

This theory is rooted in access to adequate resources. If one has high levels of social support and a high socioeconomic status, one is more likely to have access to adequate resources that would allow oneself to utilize better healthcare systems and preventative healthcare. Moreover, if one developed depressive symptoms and did not have access to mental healthcare or resources to help remedy the symptoms, the fundamental cause why that individual may continue to suffer from a mental illness is that they have a poor socioeconomic status and/or poor rates of social support.

While socioeconomic status can create health inequalities and disparities among certain populations experiencing high rates of depression, it can also impact rates of academic success. Rates of retention and GPA are influenced by one's socioeconomic status. The lower one's socioeconomic status, the more likely one is to experience depressive symptoms and have low rates of retention and poor GPAs (Melnyk et al. 2014). There is a direct correlation between how much money someone has and the state of their health. Socioeconomic status determines which illnesses a person is more susceptible to developing as well as if a person has the ability to prevent or treat illnesses. This illustrates Link and Phelan's theory. If someone has inadequate access to resources they are the most likely to have poor health, rates of retention, and GPAs.

### **Race as a Key Predictor.**

While blacks are at a heightened risk for developing chronic medical conditions when compared to Whites, people of color are not always at an increased risk for experiencing depressive symptoms and developing other mental illnesses (Assari, Moazen-Zadeh, Lankarani, and Micol-Foster 2016). However, mechanisms of cumulative disadvantage, such as identifying as having a low socioeconomic status compounded with repeated exposure to limited healthcare opportunities, are associated with people of color experiencing depressive symptoms at midlife. This is attributed to ethnic and racial disparities resulting in cumulative disadvantage mechanisms experienced across one's life course negatively affecting a person's mental health (Garbarski 2015).

While people of color are at a high risk for developing depressive symptoms at midlife, younger students of color also experience discrimination and stigmatization that

can result in experiencing depressive symptoms throughout adolescence and young adulthood, though not necessarily at higher rates than whites (Respress et al. 2013). Subtle racism in school settings is associated with the development of depressive symptoms as well as with low rates of retention and poor GPAS, pointing to just one instance of disadvantage that accumulates throughout one's life course (Respress et al 2013).

In a recent study examining Latino students, many individuals experienced subtle racism in the classroom, making it hard to achieve academic goals and to feel accepted in academia (Arbona and Jimenez 2014). This coupled with the role strain that many Latino students experience — students feel as though they must perform well academically while adhering to traditional stereotypes and ways of life — creates an environment that easily fosters depressive symptoms. Thus, minority stress is closely associated with depression (Arbona and Jimenez 2014).

While a person's race in and of itself does not directly affect one's likelihood to experience depressive symptoms, the mechanisms of cumulative disadvantage that people of color often experience do directly affect one's likelihood. People of color are more likely to experience role strain, racism, and inadequate access to resources that, in turn, make them more susceptible to developing symptoms of depression. Moreover, experiencing these symptoms of depression often lead to decreased academic achievement and satisfaction with one's school (Arbona and Jimenez 2014; Garbarski 2015; Respress et al. 2013).

However, while people of color are at an increased risk of experiencing depressive symptoms because of these mechanisms of cumulative disadvantage, it does not mean that they always actually do experience these symptoms. A study conducted with a “nationally representative longitudinal cohort of U.S. adults with up to 25 years of follow-up” found that the effects of depressive symptoms on mortality which existed among whites in the study were not present for blacks. This finding refers to the black-white paradox, which describes how blacks experience depressive symptoms less frequently despite a higher likelihood to have chronic health issues when compared to whites in the U.S. (Assari et al. 2016).

### **Implications of the literature on this study.**

Due to the fact that the rate of mental illness is so high that “mental disorders account for nearly one-half of the disease burden for young adults in the United States, and most lifetime mental disorders have first onset by age 24 years” (Hunt and Eisenberg 2010) it has become increasingly vital that young people’s mental health be studied and taken seriously. More specifically, it is important to explore the factors that contribute to rates of depression; in 2010 almost 10% of college students in the United States were diagnosed with or treated for depression (Wolfram 2010). With a percentage of students that large experiencing depressive symptoms, a large portion of the United States’ millennial population is accounted for within that 10% of students. To put it into perspective, more than 65% of American high school graduates go on to attend post-secondary education (Hunt and Eisenberg 2010), meaning that there are over 20 million students enrolled in post-secondary institutions throughout the United States (Lipson,

Speer, Brunwasser, Hahn, and Eisenberg 613). Thus, approximately 10% of these 20 million students are experiencing depression, making it clear that this is a prevalent problem that needs attention that it is not receiving.

Depressive symptoms in college students are often overlooked. College students are treated as if they face the same issues as adults older than them. However, college students face a particular set of stressors that influence one's likelihood to develop depressive symptoms such as pressure to perform, accumulation of student loan debt, and career uncertainty. Thus, this study explores how and why college students are experiencing heightened rates of depressive symptoms, as well as aims to confirm the existing literature in this area while applying it to this college student population.

Based upon the exiting literature, I hypothesize the following for my study:

1. I hypothesize that identifying as a woman, a first generation student, and/or as someone with a low socioeconomic status currently and/or throughout childhood will be associated with an increased risk of experiencing depressive symptoms
2. I hypothesize that identifying as someone who is in a relationship will be associated with a decreased risk of experiencing depressive symptoms
3. I hypothesize that identifying as a person of color will be associated with a decreased risk of experiencing depressive symptoms
4. I hypothesize that identifying as someone who is dissatisfied with their educational institution, who perceives a lot of competition at one's school, who has a poor GPA, and/or as someone who perceives their education to not be worth the investment will be associated with an increased risk of experiencing depressive symptoms

5. I hypothesize that identifying as someone who perceives there to be stigma against mental illness and/or as someone who engages in the stigmatization against mental illness will be associated with an increased risk of experiencing depressive symptoms
6. I hypothesize that identifying as someone who has received therapy in the past year, medication for a mental illness in the past year, and/or as someone who perceives their mental health to have negatively affected their academics over the last four weeks will be associated with an increased risk of experiencing depressive symptoms
7. Given the uniquely gendered experience of mental health conditions and their predictors in American society, I hypothesize that the effects of stigma, education, and other indicators of depression (such as therapy, taking medication for a mental illness, or perceiving one's mental health to negatively affect academics) on one's likelihood to experience depressive symptoms varies by gender

## **Methodology**

### **Methods and Data.**

This study examines experienced depressive symptoms based on analyzing pre-collected data from The Healthy Minds Study. According to its website, <http://healthymindsnetwork.org/hms>., The Healthy Minds Study “is an annual web-based survey study examining mental health, service utilization, and related issues among undergraduate and graduate students. Since its national launch in 2007, HMS has been fielded at over 100 colleges and universities, with over 100,000 survey respondents” (Healthy Minds Network). The Healthy Minds Study is conducted each year by the University of Michigan and the data is publicly available. This dataset was an

ideal dataset for me to use for my study because it measures depressive *symptoms* rather than *diagnoses* of depression. This large swath of nuanced data allowed me to achieve an in-depth, descriptive view of the population; viewing how many depressive symptoms students were reporting rather than merely if they were ‘depressed’.

The data I have analyzed is derived from respondent surveys; students self-report how many depressive symptoms they experience by answering questions scored on a Likert scale (1-5 rating). In this particular survey, questions on depressive symptoms were taken from Kroenke, Spitzer, and Williams’s 2001 9-Item Patient Health Questionnaire (PHQ-9). This self-administered questionnaire asks questions pertaining to the respondents’ feelings and behavior over the period of the past two weeks. Should the respondent indicate that they have experienced a noteworthy amount of depressive symptoms over the past two weeks their questionnaire score would reflect this and result in their placement into the respondent category of having experienced any indication of major depressive symptoms. Therefore, the questionnaire used to create the dataset my study is utilizing does not diagnose any respondents with depression or claim that any respondents are suffering from a major depressive episode conclusively. Instead, the questionnaire provides data which allows researchers to indicate which respondents are experiencing depressive symptoms and how severe the symptoms are rated by the respondents.

To further clarify the main concepts I am exploring in my study, I will define in more detail here. Depressive symptoms are indicators that someone may be suffering from a mental illness called depression. In this study’s data, experiencing depressive

symptoms are characterized as things such as sleeping too much or too little, feeling hopeless, having little appetite, having poor concentration, and thinking about dying. In this dataset, they are measured using the variable `depsymp9` which is a composite variable that comes from the combined score of a respondent from the 9 depressive symptom variables derived from 9-Item Patient Health Questionnaire. These 9 questions ask if respondents have experienced various symptoms. If students indicate that they have, the given variable for that question is coded “1” for yes and “0” for no. Thus, the composite variable features a total score of how many depressive symptoms a student is experiencing out of the 9 questions. Additionally, the individuals I am studying are those respondents who identify themselves as college students. For the purpose of this study, college students are anyone who responded to this survey enrolled in a college or university participating in the Healthy Minds Study through their educational institution.

I analyzed these data using IBM’s SPSS statistics software. I used Ordinary Least Squares (OLS) regression to build models in an effort to show direct and indirect relationships, including using models that include mediating and moderating relationships. Then, I examined the the coefficients and interpreted whether a particular variable indicated an increase or decrease in the likelihood of someone experiencing depressive symptoms. I first built a baseline model examining demographic categories: gender, race, current and past socioeconomic status, relationship status, and first generation student status. Next, I built a second model which built upon the baseline model, adding in variables relating to academic attitudes and outcomes. Third, I built upon the baseline model again, this time adding in 3 variables pertaining to opinions



about stigma. Next, I built upon the baseline model by including a category of variables which pertain to other facets of depression: therapy, medication, and negative academic impact. Finally, I examined possible mediating and moderating relationships of all of the aforementioned variables through gender and/or race by conducting a sequential OLS regression and by using interaction terms.

**Sample.**

The dataset consists of a total sample size of 89,486 which was collected from 2007-2013. The total sample is composed of respondents from numerous colleges and universities throughout the United States that applied to be part of the Healthy Minds Study via an online application. Once the institution was notified that they were accepted to participate in the study, students of the institution were sent online, self-administered questionnaires to answer via their e-mails.

## CHAPTER TWO

### RESULTS

When examining Table 1, Model 1, the baseline model of basic coefficient table, gender is statistically significant in the model. Men are associated with a decrease in experiencing depressive symptoms compared to women when controlling for the other variables in the model. When examining race, we see that blacks are associated with a decrease in experiencing depressive symptoms compared to whites when controlling for the other variables in the model. Additionally, Hispanics, American Indians, Arabs, and Asians are associated with an increase in experiencing depressive symptoms compared to whites when controlling for the other variables in the model.

In terms of socioeconomic status, the model shows that current and past financial statuses are significant in describing whether someone's financial status is associated with experiencing an increase or decrease in depressive symptoms. When examining current financial status, every one unit increase in reported categories of wealth is associated with a decrease in experiencing depressive symptoms when controlling for the other variables in the model. Similarly, one's socioeconomic status as a child is also significant. Every one unit increase in a family's category of wealth while growing up is associated with a decrease in experiencing depressive symptoms when controlling for the other variables in the model. In the same vein as childhood socioeconomic status, first generation student status also proved to be pertinent. The only time that first generation

student status was statistically significant was when examining groups of people whose mothers and fathers had attended graduate school. Compared to those whose mothers had high school diplomas, having a mother with a graduate degree is associated with an increase in experiencing depressive symptoms when controlling for the other variables in the model. Similarly, having a father with a graduate degree is associated with an increase in experiencing depressive symptoms compared to those whose father's highest level of education was high school when controlling for the other variables in the model.

The last item of significance in examining the baseline model is current relationship status. Identifying as having a partner is associated with a decrease in experiencing depressive symptoms compared to their single counterparts when controlling for all of the other variables in the model.

Examining the baseline coefficient model, Model 1, was imperative in order to examine the mediating models. Model 1 had an  $R^2$  of .049, indicating that 4.9% of the variance in experienced depressive symptoms can be explained by the independent variables in this model. Evidence of mediation between variables may be determined when there is a reduction in the size of the coefficient of a variable in the model that includes the additional variables that have the possibility of claiming some variance in the variable compared to the baseline. In Model 3, the first of block of variables are variables pertaining to education which include grade point average (GPA), satisfaction with one's institution, perceived competition between students, whether the respondent believes their education will be worth the investment after graduation, and how the respondent feels about their job prospects upon graduation. The  $R^2$  for Model 3 is .146

Table 1. Baseline Model and Baseline Plus Academic Variables Model.

Variable	Model 1			Model 2			Model 3		
	Coef.	Std. Err.	P> z	Coef.	Std. Err.	P> z	Coef.	Std. Err.	P> z
Gender	-0.312	0.018	0	-0.346	0.043	0	-0.387	0.041	0
Black	-0.289	0.039	0	-0.311	0.089	0	-0.397	0.085	0
Hispanic	0.106	0.034	0.002	0.055	0.076	0.468	0.055	0.072	0.26
American Indian	0.256	0.084	0.002	0.332	0.191	0.083	0.271	0.181	0.158
Arab	0.526	0.075	0	0.389	0.17	0.022	0.366	0.16	0.015
Asian	0.502	0.026	0	0.354	0.068	0	0.093	0.065	0.005
Pacific Islander	0.113	0.108	0.295	0.172	0.243	0.479	0.162	0.23	0.71
Current Financial Status	-0.639	0.015	0	-0.584	0.035	0	-0.412	0.034	0
Past Financial Status	-0.154	0.014	0	-0.153	0.034	0	-0.11	0.032	0
Relationship Status	-0.473	0.017	0	-0.45	0.041	0	-0.428	0.039	0
Education for Mom - Less than HS	0.075	0.048	0.117	0.162	0.109	0.135	0.17	0.103	0.099
Education for Mom - Some College	0.037	0.028	0.187	0.13	0.067	0.051	0.133	0.063	0.03
Education for Mom - College	0.081	0.029	0.005	0.092	0.07	0.184	0.109	0.066	0.104
Education for Mom - Grad School	0.126	0.032	0	0.166	0.075	0.027	0.164	0.071	0.019
Education for Dad - Less than HS	0.11	0.046	0.016	-0.058	0.104	0.581	-0.104	0.099	0.263
Education for Dad - Some College	0	0.029	0.993	-0.1	0.069	0.145	-0.061	0.065	0.311
Education for Dad - College	0.045	0.029	0.122	-0.139	0.069	0.045	-0.13	0.065	0.027
Education for Dad - Grad School	0.112	0.03	0	-0.091	0.072	0.202	-0.097	0.068	0.1
GPA							-0.057	0.015	0
Satisfaction with school							0.518	0.023	0
Perception of competition in school							0.197	0.039	0
Belief that school is worth it							-0.648	0.06	0
Belief that job prospects are good							-0.727	0.048	0
Intercept	6.663	0.053	0.000	6.706	0.127	0.000	6.346	0.149	0.000
Coefficient	R2: .049	N: 80154		R2: .044	N: 14511		R2: .146	N: 14511	
	Model 1 is the baseline model, including variables describing gender, race, current and past financial status, relationship status, and highest level of parental education			Model 2 is the baseline model with cases relevant to Model 3			Model 3 is the baseline model plus a block of variables pertaining to academics: gpa, satis, competRecode, worthinRecode, prospectRecode		

compared to Model 2's R2 of .044. This indicates that the block of educational variables added to the baseline variables in Model 3 explains 14.6% of the variance in experienced depressive symptoms compared to Model 2's 4.4%. Moreover, when examining these educational variable's coefficients, I am able to see that having a GPA of B- and above is

associated with a decrease in experiencing depressive symptoms when compared those who have a GPA of C+ and below. Being satisfied with the institution you are attending is associated with an increase in experiencing depressive symptoms when compared to those who are dissatisfied. Perceiving a competitive educational environment is associated with an increase in experiencing depressive symptoms compared to those who do not perceive competition between fellow students. Believing that your investment in attending college is worth it is associated with a decrease in experiencing depressive symptoms compared to those who do not think it is worth it. Lastly, believing that your job prospects upon graduation are good is associated with a decrease in experiencing depressive symptoms compared to those who do not believe their job prospects are good.

Comparing Model 3 to Model 2 shows some mediating relationships between variables. When examining the coefficients for gender and identifying as black, Hispanic or Pacific Islander these data show that the block of educational variables does not partially explain the overall association between these variables and experiencing depressive symptoms. However, the coefficient for identifying as Asian decreases, indicates that the block of educational variables does partially explain the overall association between identifying as Asian and experiencing depressive symptoms. Next, the coefficient for current financial status decreases indicating that the educational variables partially explain the overall association between current and financial status and experiencing depressive symptoms. When examining parental educational level as well as relationship status, the changes in the coefficients from Model 3 to Model 2 are small and not substantively important.

Table 2. Baseline Plus Stigma Variables Model.

Variable	Model 4			Model 5		
	Coef.	Std. Err.	P> z	Coef.	Std. Err.	P> z
Gender	-0.313	0.018	0	-0.364	0.018	0
Black	-0.285	0.04	0	-0.335	0.039	0
Hispanic	0.097	0.034	0.005	0.086	0.034	0.012
American Indian	0.273	0.085	0.001	0.268	0.084	0.001
Arab	0.507	0.076	0	0.464	0.075	0
Asian	0.49	0.027	0	0.429	0.027	0
Pacific Islander	0.096	0.11	0.384	0.068	0.109	0.534
Current Financial Status	-0.641	0.015	0	-0.634	0.015	0
Past Financial Status	-0.149	0.015	0	-0.14	0.014	0
Relationship Status	-0.473	0.018	0	-0.463	0.018	0
Education for Mom - Less than HS	0.091	0.048	0.058	0.078	0.048	0.102
Education for Mom - Some College	0.035	0.028	0.212	0.036	0.028	0.198
Education for Mom - College	0.08	0.029	0.007	0.087	0.029	0.003
Education for Mom - Grad School	0.125	0.032	0	0.147	0.032	0
Education for Dad - Less than HS	0.104	0.046	0.025	0.104	0.046	0.023
Education for Dad - Some College	0.001	0.029	0.963	0.003	0.029	0.908
Education for Dad - College	0.045	0.029	0.124	0.048	0.029	0.1
Education for Dad - Grad School	0.11	0.031	0	0.122	0.03	0
Stigma1 - Mental health treatment is a sign of failure				0.199	0.021	0
Stigma2 - People think less of those who have received mental health treatment				0.387	0.021	0
Stigma3 - I think less of those who have received mental health treatment				0.197	0.032	0
Intercept Coefficient	6.651	0.054	0.000	6.309	0.055	0.000
	<b>R2: .049</b>	<b>N: 78470</b>		<b>R2: .061</b>	<b>N: 78470</b>	
	Model 4 is the baseline model with cases relevant to Model 5			Model 5 is the baseline model plus a block of variables pertaining to stigma: stig_pcv_5Recode, stig_pcv_7Recode, stig_per_2Recode		

Model 5 shows a block of variables related to stigma: feeling that most people believe receiving mental health treatment is a personal sign of failure, believing that people think less of those who have received mental health treatment, and personally thinking less of those who have received mental health treatment. The  $R^2$  in Model 5 of .061 compared to  $R^2$  in Model 4 of .049 indicates that that 6.1% of the variance in experienced depressive symptoms can be explained by the variables relating to stigma in this model. Upon examining the coefficients for these variables, I found that feeling that most people believe receiving mental health treatment is a personal sign of failure is associated with an increase in experiencing depressive symptoms compared to those who do not believe so. Additionally, believing that people think less of those who receive mental health treatment as well as those personally believing that they would think less of those receiving mental health treatment is associated with an increase in experiencing depressive symptoms compared to those who do not believe so. When comparing the mediation effects of these stigma variables, they do partially explain the overall association between being Asian, Arab, or Pacific Islander (vs. white) and experiencing depressive symptoms, given the slight decrease in the coefficients in Model 5 compared to Model 4.

Model 7 includes a block of variables related to other measures for depression which includes if a person had gone to therapy in the past year, if a person had taken medication for mental illness in the past year, and if a person felt their mental health was negatively impacting their academics over the past 4 weeks. The  $R^2$  for Model 7, .342, compared to the  $R^2$  for Model 6, .048, indicates that 34.2% of the variance in

experienced depressive symptoms can be explained by the variables relating to other measures of depression in this model.

When examining the mediating effects within Model 7, the block of variables for other measures of depression partially explain the association between gender, identifying as black, Hispanic, American Indian, Arab or Pacific Islander, current and past financial statuses, current relationship status, and highest level of parental education (parents having less than a high school education, some of a college education, a college degree, or a graduate degree) and experiencing depressive symptoms, as evidenced by the decrease in the coefficient values for all of these independent variables from Model 6 to Model 7.

In addition to examining mediation effects, I also examined the possibility of moderating relationships causing independent variables to vary by gender. This means that gender could possibly change the strength or the direction of the relationships between the independent variables and the dependent variable depressive symptoms. To examine possible moderating relationships in the data, I created interaction terms for the three different blocks of independent variables — academic variables, stigma variables, and other predictors of depression variables — which consists of a given variable multiplied by gender to create a new variable, or interaction term. With the introduction of an interaction term into a model, I am able to see whether or not, for example, one's satisfaction with the school they attend varies by gender. If this is the case, and the variable gender\*satisfaction claims more variance in the model than the variables gender or satisfaction do separately, a man who is satisfied with school may associated with



associated with experiencing less depressive symptoms than someone who is a man or someone who is satisfied with school.

Table 3. Baseline Plus Other Indicators of Depression Model.

Variable	Model 6			Model 7		
	Coef.	Std. Err.	P> z	Coef.	Std. Err.	P> z
Gender	-0.323	0.019	0	-0.165	0.015	0
Black	-0.286	0.04	0	-0.128	0.033	0
Hispanic	0.108	0.034	0.002	0.06	0.029	0.038
American Indian	0.268	0.085	0.002	0.028	0.07	0.687
Arab	0.495	0.076	0	0.255	0.064	0
Asian	0.474	0.027	0	0.497	0.023	0
Pacific Islander	0.095	0.11	0.387	0.023	0.091	0.798
Current Financial Status	-0.636	0.015	0	-0.308	0.013	0
Past Financial Status	-0.149	0.015	0	-0.078	0.012	0
Relationship Status	-0.477	0.018	0	-0.337	0.015	0
Education for Mom - Less than HS	0.078	0.048	0.107	0.054	0.04	0.183
Education for Mom - Some College	0.034	0.028	0.23	0.004	0.024	0.851
Education for Mom - College	0.079	0.03	0.008	0.054	0.025	0.029
Education for Mom - Grad School	0.123	0.033	0	0.057	0.027	0.035
Education for Dad - Less than HS	0.11	0.046	0.018	0.064	0.039	0.095
Education for Dad - Some College	0.006	0.029	0.843	-0.032	0.024	0.19
Education for Dad - College	0.045	0.029	0.125	-0.005	0.024	0.838
Education for Dad - Grad School	0.109	0.031	0	0.028	0.026	0.273
Received therapy in past year				0.273	0.021	0
Taken meds for mental illness in past year				0.417	0.022	0
Feel academics have been affected by mental health in past 4 weeks				1.309	0.008	0
Intercept Coefficient	6.641	0.054	0.000	2.983	0.049	0.000
	<b>R2: .048</b>	<b>N: 77975</b>		<b>R2: .342</b>	<b>N: 77975</b>	
	Model 6 is the baseline model with cases relevant to Model 7			Model 7 is the baseline model plus a block of variables pertaining to other indicators of depression: ther_any, meds_any, and aca_impa		

Table 4. Moderation Effects of Gender on Academic Variables.

Variable	Model 8		
	Coef.	Std. Err.	P> z
Gender	-.302	.210	.150
Black	-.394	.085	.000
Hispanic	.082	.072	.254
American Indian	.272	.181	.132
Arab	.365	.160	.023
Asian	.096	.065	.141
Pacific Islander	.159	.230	.488
Current Financial Status	-.413	.034	.000
Past Financial Status	-.110	.032	.001
Relationship Status	-.427	.039	.000
Education for Mom - Less than HS	.170	.103	.099
Education for Mom - Some College	.133	.063	.035
Education for Mom - College	.109	.066	.099
Education for Mom - Grad School	.164	.071	.021
Education for Dad - Less than HS	-.098	.068	.148
Education for Dad - Some College	-.131	.066	.045
Education for Dad - College	-.063	.065	.332
Education for Dad - Grad School	-.102	.099	.300
GPA	-.056	.038	.138
Satisfaction with school	.526	.037	.000
Perception of competition in school	.085	.066	.194
Belief that school is worth it	-.621	.096	.000
Belief that job prospects are good	-.803	.080	.000
Gender*GPA	-.002	.041	.964
Gender*Satisfaction with school	-.014	.046	.762
Gender*Perception of competition in school	.175	.082	.032
Gender*Belief that school is worth it	-.037	.122	.761
Gender*Belief that job prospects are good	.119	.100	.234
Intercept	6.310	.162	.000
Coefficient			
	R2: .146	N: 14514	
	Model 8 is the baseline model plus a block of variables pertaining to academics: gpa, satis, competRecode, worthitRecode, prospecRecode, genderrecodegpa, genderrecodesatisf, genderrecodecompetRecode, genderrecodeworthitRecode, genderrecodeprospecRecode		

Table 5. Moderation Effects of Gender on Stigma Variables.

Variable	Model 9		
	Coef.	Std. Err.	P> z
Gender	-.343	.028	.000
Black	-.335	.039	.000
Hispanic	.085	.034	.013
American Indian	.268	.084	.001
Arab	.463	.075	.000
Asian	.427	.027	.000
Pacific Islander	.077	.109	.480
Current Financial Status	-.633	.015	0.000
Past Financial Status	-.140	.014	.000
Relationship Status	.463	.018	.000
Education for Mom - Less than HS	.082	.048	.087
Education for Mom - Some College	.036	.028	.196
Education for Mom - College	.087	.029	.003
Education for Mom - Grad School	.147	.032	.000
Education for Dad - Less than HS	.103	.046	.025
Education for Dad - Some College	.003	.029	.911
Education for Dad - College	.047	.029	.103
Education for Dad - Grad School	.122	.030	.000
Stigma1 - Mental health treatment is a sign of failure	.201	.035	.000
Stigma2 - People think less of those who have received mental health treatment	.374	.036	.000
Stigma3 - I think less of those who have received mental health treatment	.136	.046	.003
Gender*Stigma1	-.003	.044	.941
Gender*Stigma2	.019	.045	.671
Gender*Stigma3	.125	.064	.050
Intercept Coefficient	6.303	.055	.000
	R2: .061	N: 78492	
	Model 9 is the baseline model plus a block of variables pertaining to stigma: stig_pcv_5Recode, stig_pcv_7Recode, stig_per_2Recode, genderrecode stig_pcv_5Recode, genderrecode stig_pcv_7Recode, genderrecode stig_per_2Recode		

Table 6. Moderation Effects of Gender on Other Indicators of Depression Variables.

Variable	Model 10		
	Coef.	Std. Err.	P> z
Gender	-.272	.033	.000
Black	-.130	.033	.000
Hispanic	.060	.029	.038
American Indian	.029	.070	.681
Arab	.252	.064	.000
Asian	.497	.023	.000
Pacific Islander	.029	.091	.748
Current Financial Status	-.308	.013	.000
Past Financial Status	-.078	.012	.000
Relationship Status	.335	.015	.000
Education for Mom - Less than HS	.056	.040	.165
Education for Mom - Some College	.005	.024	.834
Education for Mom - College	.054	.025	.029
Education for Mom - Grad School	.057	.027	.034
Education for Dad - Less than HS	.063	.039	.103
Education for Dad - Some College	-.032	.024	.182
Education for Dad - College	-.005	.024	.830
Education for Dad - Grad School	.028	.026	.282
Received therapy in past year	.336	.040	.000
Taken meds for mental illness in past year	.465	.040	.000
Feel academics have been affected by mental health in past 4 weeks	1.338	.013	0.000
Gender*Received therapy in past year	-.082	.047	.081
Gender*Taken meds for mental illness in past year	-.070	.048	.148
Gender*Feel academics have been affected by mental health in past 4 weeks	-.046	.016	.004
Intercept	3.022	.050	.000
	R2: .342	N: 77996	
	Model 7 is the baseline model plus a block of variables pertaining to other indicators of depression: ther_any, meds_any, aca_impa, genderrecodether_any, genderrecodemeds_any, genderrecodeacaimpa		

In my analysis of moderation effects in the data, I found that three of the interaction terms I introduced to my models changed the strength or the direction of the relationship between the independent variables and depressive symptoms. These are shown in Tables 7, 8, and 9. Table 7 illustrates the relationship between perception of competition in school and gender. Women who do not perceive competition in school are associated with experiencing slightly lower levels of depressive symptoms compared to women who do perceive competition in school. Men who do not perceive competition in school are associated with experiencing slightly lower levels of depressive symptoms compared to men who do perceive competition in school. Moreover, the effect of the perception of competition in school is slightly stronger on men than women given the .26 difference across levels of perception of competition in school compared to the .085 difference across levels of perception of competition in school for women.

Table 8 depicts the relationship between “I think less of those who have received mental health treatment” (Stigma3) and gender. Women who indicated that they do not think less of those who have received mental health treatment were associated with experiencing slightly lower levels of depressive symptoms compared to women who indicated that they do think less of those who have received mental health treatment. Additionally, men who indicated that they do not think less of those who have received mental health treatment were associated with experiencing slightly lower levels of depressive symptoms compared to men who indicated that they do think less of those who have received mental health treatment. Furthermore, the effect of identifying as someone who indicated they they think less of someone who has received mental health

treatment is slightly stronger on men than on women given the .261 difference across levels of stigma for men compared to the .136 difference across levels of stigma for women.

Lastly, the relationship between gender and indicating that you feel that academics have been affected by your mental health in the past 4 weeks is shown in Table 9. Women who did not indicate that their academics have been affected by their mental health in the past 4 weeks were associated with experiencing lower levels of depressive symptoms than women who had indicated that their academics had been affected by their mental health in the past 4 weeks. Men who did not indicate that their academics had been affected by their mental health in the past 4 weeks were associated with experiencing lower levels of depressive symptoms than men who had indicated that their academics had been affected by their mental health in the past 4 weeks. Moreover, the effect of indicating that your academics have been affected by your mental health in the past 4 weeks is slightly stronger on women than men as illustrated by the 1.338 difference across levels of academic impact for women compared to the 1.292 difference across levels of academic impact for men.

Table 7. Explanation of Moderating Effects: Gender\*Competition.

	Gender		
		0	1
Competition	0	6.31	$6.31 + -.302$
	1	$6.31 + .085$	$6.31 + -.302 + .085 + .175$
	Gender		
		0	1
Competition	0	6.31	6.008
	1	6.395	6.268

Table 8. Explanation of Moderating Effects: Gender\*Stigma3.

	Gender		
		0	1
Stigma3	0	6.303	$6.303 + -.343$
	1	$6.303 + 0.136$	$6.303 + -.343 + .136 + .125$
	Gender		
		0	1
Stigma3	0	6.303	5.96
	1	6.439	6.221

Table 9. Explanation of Moderating Effects: Gender\*Academic Impact.

	Gender		
		0	1
Academic Impact	0	3.022	3.022 + -.272
	1	3.022 + 1.338	3.022 + -.272 + 1.338 + -.046
	Gender		
		0	1
Academic Impact	0	3.022	2.75
	1	4.36	4.042

### Discussion.

My findings largely supported the existing literature on depressive symptoms across various demographic backgrounds and supported all of my hypotheses. First, I will examine the baseline model, or Model 1, which can be found in Table 1. When examining my results on race, I found them to be closely related back to Assari et al.'s 2016 study. In this study, just as in Assari et al.'s study, blacks were not associated with experiencing heightened depressive symptoms. Instead, whites were associated with experiencing heightened depressive symptoms. While blacks may be more susceptible to mechanisms of cumulative disadvantage that affect them throughout their life course when compared to whites, this is more likely to affect their physical health or their mental health around mid-life (Garbarski 2016). Thus, for the population that I examined, my results served to confirm the existing literature surrounding people of color and the development of depressive symptoms.



When examining my results pertaining to current and past socioeconomic status, I again found that they were supported by the preexisting literature. In particular, Phelan, Link and Tehranifar's 2010 study maintains that the association between health and socioeconomic status persists throughout time; the more financially comfortable a person is, the more likely they are to be in good health. My results echoed this finding. I found that every unit increase in current or past financial status is associated with a decrease in experiencing depressive symptoms for the college students in this sample.

My findings on relationship status were also somewhat related to the existing literature. Thorsen and Pearce-Morgan's 2016 study found that heightened rates of depression in adolescence led to an increase in the number of dating conflicts in young adulthood. In this study, I found that those in a relationship were associated with a decrease in experiencing depressive symptoms when compared to their single counterparts. While my results do not completely support or contradict Thorsen and Pearce-Morgan's study, they do indicate an association between relationship status and depressive symptoms that must be further explored in additional studies in an effort to expand the discussion around healthy relationships and mental illness.

When further examining mediating relationships throughout my results, I came to several conclusions. The first is that those with GPAs of B- or higher are associated with experiencing less depressive symptoms than those with GPAs of B- or below. This largely supports Melnyk et al.'s 2014 study as well as Respress et al.'s 2013 study. GPAs may decrease for a variety of reasons. However, according to Melnyk et al., rates of retention and GPA are influenced by one's socioeconomic status. Just as socioeconomic status is

associated with influencing depressive symptoms, it also influences one's GPA which, in turn, also influence depressive symptoms. GPA is also tied to race (Respress et al. 2013). Low GPAs are associated with depressive symptoms which may be due to subtle racism in schools. Therefore, poor GPAs are associated with heightened depressive symptoms for a variety of reasons. However, for the purpose of my study I only examined whether or not poor GPAs were associated with an increase in experiencing depressive symptoms, not the reasons as to why they were associated. A further study may aid in examining why GPAs within college students decrease.

Secondly, while examining mediating effects I found that stigma —stigmatizing others for a mental illness and/or feeling that you are being stigmatized for a mental illness— is associated with an increase in experiencing depressive symptoms. This supports Link et al.'s 1997 study which examined the way in which the stigmatization of those suffering from mental illness can exacerbate the symptoms of the mental illness as well as leave lasting psychological issues long after the symptoms of the mental illness that caused the stigmatization has been dealt with.

The last significant mediating effect I found was the way that receiving therapy or taking medication for a mental illness in the past year was associated with an increase in experiencing depressive symptoms. This makes sense as someone who had been receiving treatment -- either through therapy or through the use of medication -- would likely be associated with experiencing depressive symptoms.

In terms of moderating relationships in my models, I found 3 statistically significant gender interactions. The first effect is the effect of perceiving competition in

school was stronger on men than on women. Men who perceive high levels of competition in school are associated with experiencing slightly higher levels of depressive symptoms when compared to women. The effect of thinking less of those who have received mental health treatment (Stigma3) was also slightly stronger on men than on women, meaning that men who think less of those who have received mental health treatment are associated with experiencing slightly higher levels of depressive symptoms when compared to women. Lastly, the effect of indicating that you believe your academics have been impacted by your mental health in the past 4 weeks was stronger on women than on men. This indicates that women who indicated that they believe their academics had been impacted by their mental health in the past 4 weeks are associated with experiencing higher levels of depressive symptoms when compared to men.

**Implications.**

While my results did not contribute any new findings to what is currently available about mental health and depressive symptoms in college students, it proved to confirm many of the existing findings in the literature as well as shed light on where more research could serve to be done. Given that my findings show how members of various demographic groups are more susceptible to experiencing depressive symptoms than others, those in higher education must take precautions to defend against students developing depressive symptoms as well as make concerted efforts to implement programs to help those already experiencing depressive symptoms cope with them in a healthy way.

As my findings showed, those who were white, those who identified as women, and those with low socioeconomic statuses were associated with an increase in experiencing depressive systems. This implies that school officials should have these groups in mind when writing policies and planning programming on campus.

Additionally, those with poor GPAs and those who perceived high levels of competition within their academic institution were also associated with an increase in experiencing depressive symptoms. If more students were given the support that they need to succeed and combat some of the negative aspects of academic life, such as competition with one's academic institution, fewer students might be reporting experiencing depressive symptoms.

Finally, drawing on Pratt and Brody's 2014 study, depressed, hopeless young adults, in this case, college students, are apt to grow into depressed, hopeless adults. It is an institution's duty to aid students in anyway possible to prevent this from happening. With all of the data that now exists on college student's mental health, and knowing that only 17% of all adults in the United States are thought to have ideal mental health (World Health Organization), the time to ignore the mental health crisis existing in college classrooms across the country is no longer. Students are suffering; there is no excuse for allowing them to grow into suffering adults.

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## VITA

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